
ANNOORBOTS
PARK SECURITY
CASE STURDY: HERITAGE PARK!
TEAM #18098

BACKGROUND

Hamilton County Regional Parks

- **Chester Frost Park** - has shelters and a pavilion available for rent.
- **Enterprise South Nature Park** - is situated on 2,800 wooded acres
- **Tennessee Riverpark** – has a dam that offers prime fishing, a marsh area, shelter area, and other fishing areas.

Community Parks

- At these parks, friends and families can go and enjoy fun recreational activities such as: Running, Walking, Soccer, Baseball, Basketball, Fishing, Football, Hiking, and Play grounds for children

HERITAGE HOUSE

Heritage House is an Arts and Civic Center located in Heritage Park.

Once the estate of **the Henshell Family**, the **park** and **house** have been **transformed for the community's benefit.**

Festivals and other public events: These include Hub Fest, Photo Fest, CHEO Healthwise Seminar, East Brainerd Marketplace, Sweet Diversity, Bark in the Park, East Brainerd Public Safety Seminar, Nights of Heritage, Ambi Artists and other events.

Heritage House may also be rented for private events and meetings.

PROBLEM IDENTIFICATION

- **At night it gets very dark and since there is no lights** and poses possible dangers when there are programs after sunset.

- **There is no security whatsoever, this poses as a threat to children** for if their parent looks away, they can get kidnapped.

- There were more than 1,600 abductions in 2018 and about 80 were at a park or playground across the United States.

- The most common lures were offering the child candy or sweets, asking the child questions or using an animal to interest the child.

- The National Center for Missing and Exploited Children (NCMEC) in a 10 year abduction report analysis **said *five percent of the incidents* occurred at a park or playground.**

PROBLEM IDENTIFICATION

❖ **Although there were other problems like:**

- **No accessible swing for handicapped people**
- **Gravels** pathways difficult for handicapped wheelchair
- **Bathrooms also are not accessible** to physically impaired and mothers with babies

❖ We focus our project on the security of the park

INNOVATIVE SOLUTIONS

- We will create an app called ***TRACK IT***, where parents can use it to track their kids within the park boundaries or predefined boundaries or boundaries that parents can draw up.

- There will be a **hand or foot "bracelet" or necklace machine (**with RFID and GPS **)** where parents can buy to be used for the tracking. This band can be re-use multiple times **or return for your money at no charge.**

- **Camera on Lighting poles** also for security purposes. Lighting poles will be powered by 100% renewables using solar panels and rechargeable batteries.

SAFETY SENSORS – BACKGROUND

Hospital Baby Tracking Sensors

- *Hospital bracelets were used for infants to prevent kidnapping and patient who had mental disabilities so they did not escape. When* the sensor is activated, the whole hospital can go into a lockdown.

Sensors used at stores to prevent shoplifting

- *Large stores uses this technology when passing through entrances*

Invisible Dog Fence Sensors

- *In-ground fences are used to keep dogs inside of a certain area and if they try to leave then a special collar, they wear will shock them or make a loud noise depending on what the owner wants.*

Phone-to-Phone Apps:

- *There are existing phone apps using GPS (e.g. Fami-Safe, Find my Friends, Find my Device) that can track the phones of your kids, but ours is something you can use for all kids even if they don't have a phone.*

Our "TRACK-IT" Technology

Innovation in Idea

- Our idea is unique because **it has never been applied to a park for public use**.
- Secondly, **although the sensors exist**, they will **need to be program differently** to work for this application and
- Thirdly, our phone app will **have the capability to send info to the local police with GPS info** on the bracelet/necklace, and parents phone number for tracking purposes during a kidnap.

Implementation:

- We will **create different predefined boundaries/perimeters on the park** (around playgrounds, areas kids like to play, open fields and the park boundary).
- **Each of these boundaries/perimeters will have a wire sensor** similar to the dog invisible fence sensor.
- We will **use different radio frequencies** because of multiple boundaries so that they do not interfere with each other.

Our "TRACK-IT" Technology (cont.)

Implementation (RFID and GPS Tracking):

- Each child's bracelet or necklace will have a **Radio Frequency ID** (***RFID***) and ***GPS chips*** on it.
- The **RFID** will be ***for the boundaries inside the park*** and the **GPS** will be activated ***for crossing the outer park's boundary***.
- **Each child's bracelet or necklace** will be **linked to a certain radio frequency** based on the boundary selected by the parent to monitor.
- When a **boundary is crossed** by the child's bracelet or necklace, **beeping message will be sent to the parent's phone**.
- When the **overall park boundary is crossed**, a message on the parents phone will pop up **to send information to local police with child's bracelet/necklace GPS info** and parents cell phone to confirm it's not by mistake.

Our "TRACK-IT" Technology (cont.)

Phone Apps (Implementation)

- For the App, there are softwares like **Andromo**, it is super simple and easy to use and you can make all kinds of apps with it. But the only problem is that its **exclusively for android**.

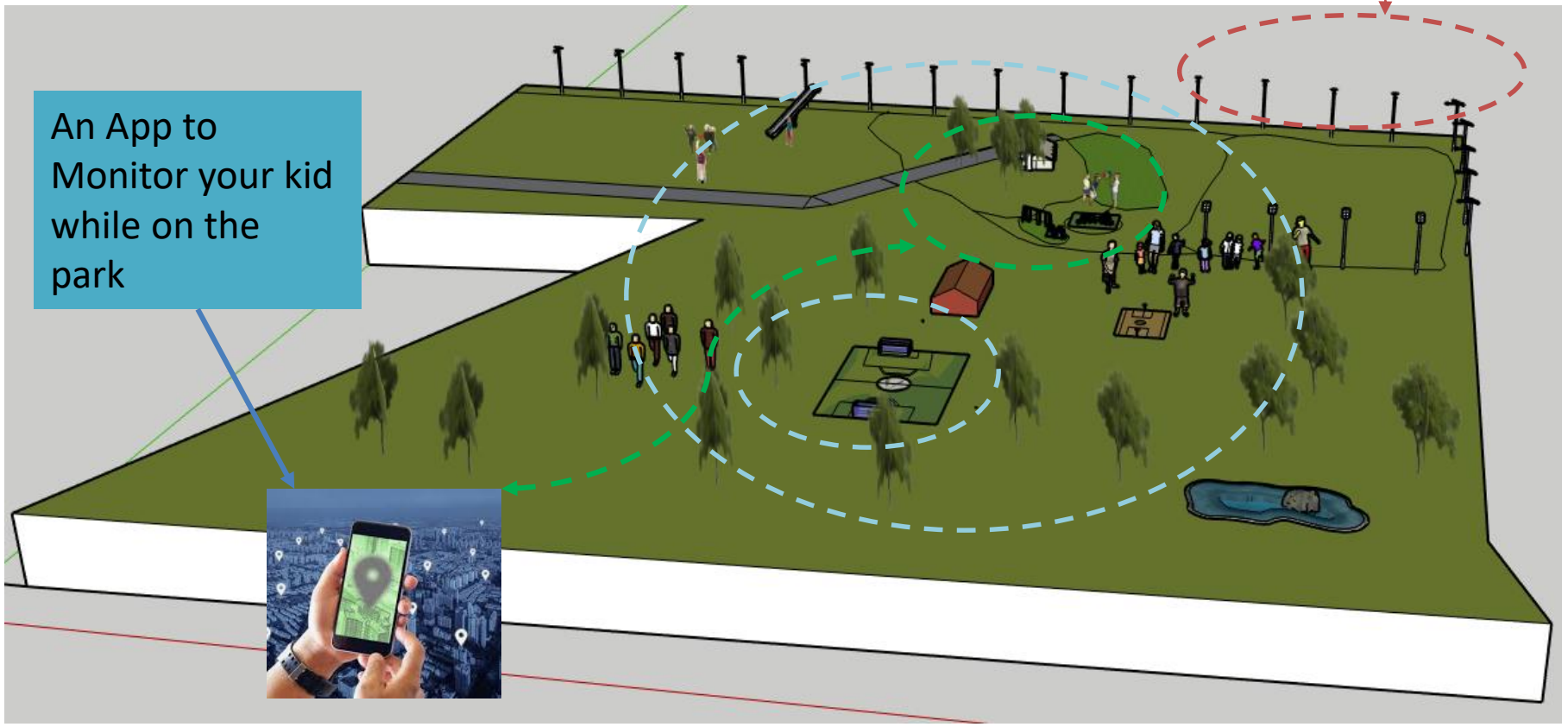
- There is another app building software called '**Swift**' that uses 'Xcode' and its easy to learn but it **only works on iOS devices**.

- We decided to get an app builder that **works on both iOS and Android**. One of them is called '**Appery**' and **it's a cloud based mobile app-builder** so there's no need to download a software.

- Another one is called **'Flutter'** which is the one we are probably going to use. It's **made by google to build apps for both iOS and Android**. *Its super simple and easy to use.*

IMPLEMENTATION

This sketch shows: (1) example of solar-powered lighting poles and (2) some boundaries in the park for monitoring your kids.



COSTS OF SECURITY

- Lighting Poles and Cameras (Solar Powered with Chargeable Batteries):

  $2,000 per pole (10 poles at $20,000)

- Child Safety **TRACK-IT** System Estimated Cost: $20,000

- System Installation Cost : $30,000

APPROXIMATE TOTAL: $70,000 (Lowest Est)

SHARING

- ✓ We shared this project with the community through our website www.annoorrobotics.com

- ✓ We shared our project with the **Chattanooga Parks Director *James Bergdoll*** and we obtained very good feedback from him.

SOURCES OF INFORMATION

1. http://parks.hamiltontn.gov/222/Regional-Parks
2. http://www.chattanooga.gov/youthandfamily/recreation/senior-and-cultural-facilities/heritage-house
3. http://www.missingkids.com/theissues/nonfamily
4. https://app.sketchup.com
5. https://www.nytimes.com/1991/02/08/us/hospitals-using-wrist-sensors-to-protect-patients.html
6. https://www.geek.com/news/hi-tech-baby-tracking-at-hospitals-543807/)
7. https://www.sportdog.com/in-ground-fencing),

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